

How Bash Processes Command Lines

Problem 1 – Worked Solution

Initial Command Line

```
echo "The number $(( 5-2 ))" > number.txt
```

Step 1 – Tokenisation – Identify Unquoted Metacharacters

```
echo "The number $(( 5-2 ))" > number.txt
```

Step 1 – Tokenisation – Find Words & Operators

```
echo “The number $(( 5-2 ))” > number.txt
```

Step 2 – Command Identification

```
echo "The number $(( 5-2 ))" > number.txt
```

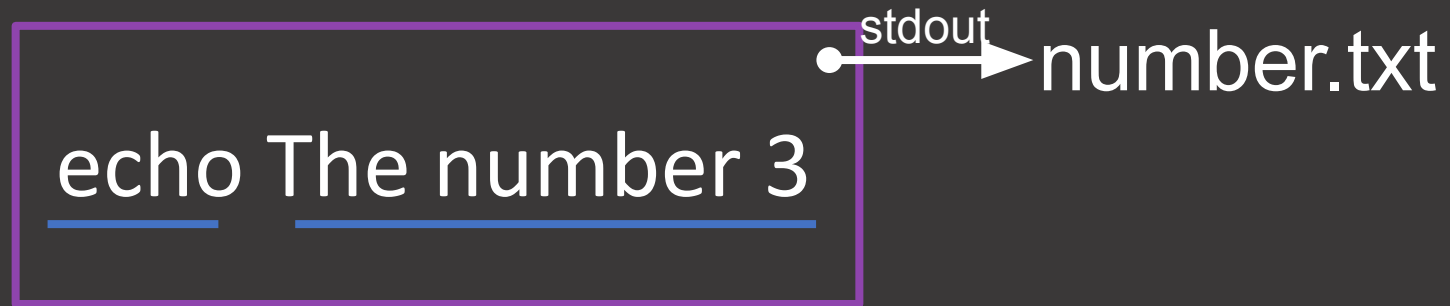
Step 3 – Expansions

```
echo "The number 3" > number.txt
```

Step 4 – Quote Removal

```
echo The number 3 > number.txt
```

Step 5 – Redirections



How Bash Processes Command Lines

Problem 2 – Worked Solution

Initial Command Line

```
ls /etc | grep net > net.txt
```

Step 1 – Tokenisation – Identify Unquoted Metacharacters

ls  /etc  | grep  net  > net.txt

Step 1 – Tokenisation – Find Words & Operators

ls /etc | grep net > net.txt

Step 2 – Command Identification

```
ls /etc | grep net > net.txt
```

Step 3 – Expansions

```
ls /etc | grep net > net.txt
```

There are no expansions to perform

Step 4 – Quote Removal

```
ls /etc | grep net > net.txt
```

There is no quote removal to perform

Step 5 – Redirections

```
ls /etc | grep net > net.txt
```


Step 5 – Redirections



How Bash Processes Command Lines

Problem 3 – Worked Solution

Initial Command Line

```
mkdir $folder && cd $folder && touch $name
```

Step 1 – Tokenisation – Identify Unquoted Metacharacters

mkdir\$folder && cd\$folder && touch\$name

Step 1 – Tokenisation – Find Words & Operators

mkdir \$folder && cd \$folder && touch \$name

Step 2 – Command Identification

```
mkdir $folder && cd $folder && touch $name
```

Step 3 – Expansions – Parameter Expansion

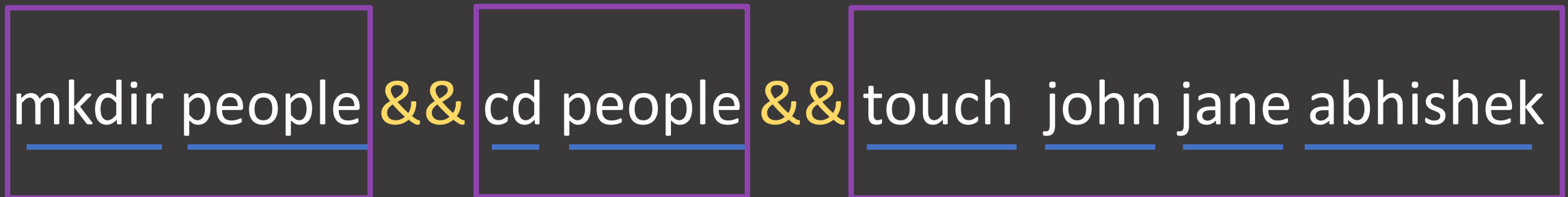
```
mkdir people && cd people && touch john,jane,abhishek
```

Step 3 – Expansions – Word Splitting

mkdir people && cd people && touch john jane abhishek

Step 4 – Quote Removal

```
mkdir people && cd people && touch john jane abhishek
```

The diagram illustrates the command execution process for the command 'mkdir people && cd people && touch john jane abhishek'. It is divided into three purple rectangular boxes. The first box contains 'mkdir' and 'people', with blue underlines under each word. The second box contains 'cd' and 'people', also with blue underlines. The third box contains 'touch', 'john', 'jane', and 'abhishek', each with a blue underline. The boxes are connected by '&&' symbols, indicating sequential execution of the commands.

There is no quote removal

Step 5 – Redirection

```
mkdir people && cd people && touch john jane abhishek
```

There is no redirection

How Bash Processes Command Lines

Problem 4 – Worked Solution

Initial Command Line

```
touch "Daily Report $(date +"%a %d %h %Y")"
```

Step 1 – Tokenisation – Identify Unquoted Metacharacters

```
touch "Daily Report $(date +%a %d %h %Y)"
```

Step 1 – Tokenisation – Find Words & Operators

touch “Daily Report \$(date +%a %d %h %Y)”

Step 2 – Command Identification

```
touch “Daily Report $(date +%a %d %h %Y)”
```

Step 3 – Expansions – Command Substitution

```
touch "Daily Report 30 Aug 2020"
```


Step 4 – Quote Removal

touch “Daily Report 30 Aug 2020”

There is no quote removal

Step 5 – Redirections

touch “Daily Report 30 Aug 2020”

There is no redirection